LIVERMORE LAB REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, April 8-12, 2013.

FCW THE BUSINESS OF FEDERAL TECHNOLOGY

DATA IN THE CLOUD

Demands for new IT services are not waning even as the overall number of data centers is declining. Cloud computing and shared services can help, but most agencies still need some physical capacity to support servers and storage systems -- as long as they can do so economically.

Modular data centers offer a possible solution. In this approach, compact containers or pods that resemble industrial shipping containers typically include core IT infrastructure components such as power supplies, server racks and cooling systems.

Despite their advantages, modular data centers do not work in all situations. For instance, part of Lawrence Livermore National Laboratory's charter is to support extensive high-performance computing. The Lab has one module that outside organizations can use to tap into its computing power for collaborative research projects.

But officials are not planning to install any additional pods in the immediate future because standard configurations have limited value for high-performance computing, which has rigorous power and cooling requirements, said Anna Maria Bailey, high-performance computing program facility manager at Lawrence Livermore. In addition, the Lab's cost analyses showed no savings if the modules are installed in dedicated areas outside the data center.

To read more, go to *FCW*.

Lab Manager **WORKING WITH THE BIG APPLE**

The Lab will work with CUSP to tackle problems such as transportation and air quality.

In the future, researchers from Lawrence Livermore National Laboratory and New York University (NYU) hope to take on some of the pressing problems in major urban centers, such as transportation and clean air.

These are some of the subjects of a new memorandum of understanding (MOU) signed by the Laboratory and NYU on behalf of the Brooklyn-based Center for Urban Science and Progress.

Founded about a year ago, CUSP is a public-private research center that uses New York City as its laboratory and classroom in an effort to help cities become more productive and livable. "The digital age has produced an incredible ability to collect, store and analyze data," said Steven Koonin, the director of CUSP who is a former Under Secretary of Energy for science.

The MOU provides opportunities for LLNL to host several CUSP researchers through co-op programs, summer student internships and fellowships.

To read more, go to *Lab Manager*.

AboutMyPlanet **ALL TREES ARE NOT CREATED EQUAL**

Some trees contribute to global warming.

Most people believe that planting trees -- any trees -- will help slow climate change because of the trees' ability to absorb carbon dioxide.

A new study shows that's not necessarily so: Where the trees are located makes a big difference in how they'll affect the earth's climate, with some trees actually contributing to global warming. Researchers at the Lawrence Livermore National Laboratory modeled the effect of deforestation on temperature for boreal, temperate and tropical regions.

In the tropics, keeping trees around helped to lower regional temperatures, as expected, but in the boreal zones, the trees actually caused slight warming because of the tree's ability to hold heat, and to keep the snow from reflecting sunlight.

To read more, go to *About My Planet*.

USC News LAB RESEARCHER JOINS THE CLIMATOR

At left, LLNL's Philip Duffy participates in a panel discussion with former California Gov. Arnold Schwarzenegger.

Lawrence Livermore researcher Philip Duffy recently participated in a panel discussion about the effects of climate change on California and how models are used to predict the future.

He was joined by former Gov. Arnold Schwarzenegger, who served as the keynote speaker at the USC Price School of Public Policy.

Duffy warned that while the report uses many different climate models to improve accuracy, some uncertainty in climate projections is normal because no one can pinpoint future production of greenhouse gases, natural variability and the climate system's response to greenhouse gases.

"It would be a mistake to think that if we only wait a few years, the uncertainty in future climate is going to go away or shrink substantially, and therefore we should postpone action," Duffy said.

To read more, go to *USC News*.

ieee spectrum INSIDE TECHNOLOGY

BACK TO THE FUSION

Bruno Van Wonterghem shows off fusion's bright hope.

The National Ignition Facility (NIF), located at Lawrence Livermore National Laboratory, is laser fusion's brightest hope. It houses the world's most powerful laser whose aim is not just fusion but the capability

of producing more energy than is needed to get the process started in the first place -- an achievement called ignition.

NIF's operations manager Bruno Van Wonterghem showed off the laser facility to *IEEE Spectrum* associate editor Rachel Courtland.

Follow him on a video tour of NIF for an in-depth look at the program.

To see more, go to the video.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance. To send input to the *Livermore Lab Report*, send e-mail.